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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,048	05/19/2006	Kazuo Takahashi	KOBE.0093	7515
38327	7590	01/23/2008		
REED SMITH LLP 3110 FAIRVIEW PARK DRIVE, SUITE 1400 FALLS CHURCH, VA 22042			EXAMINER WALBERG, TERESA J	
			ART UNIT	PAPER NUMBER
			3744	
			MAIL DATE	DELIVERY MODE
			01/23/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/580,048

Applicant(s)

TAKAHASHI ET AL.

Examiner

Teresa J. Walberg

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-29 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 11, 13-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 9, 12 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/19/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

It is noted that the specification presently contains a Brief Description of the Drawings which is located after the Detailed Description of the Invention.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 5, 8, 11, 13-15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Barlow (4,219,072).

Barlow discloses a heat storage unit ( Fig. 6) including a storage container (12, 14, 16) that houses a heat storage body (86), which stores heat by a state change from solid to liquid (Fig. 7), a heat exchange medium (52) which exchanges heat by directly contacting the heat storage body (86), has a smaller specific gravity than that of the heat storage body and is separated from the heat storage body (Fig. 7), a supply pipe (18) that passes through at least the heat storage body housed in the storage container and supplied the heat exchange medium into the storage container (Fig. 6), a discharge pipe (46) that discharges the heat exchange medium, the supply pipe crosses a boundary surface between the heat exchange medium and the heat storage body (Fig. 6), has a plurality of discharge holes positioned inside the heat exchange medium (Fig. 7), the supply pipe crossing vertically with respect to the boundary surface (Fig. 7), at least a part of the supply pipe extending in the horizontal direction (Fig. 6), discharge holes being provided for an area extending in the horizontal direction such that the holes are open in the vertically downward direction (Fig. 9), the supply pipe having an expanded portion that widens toward the end (Fig. 7), the discharge pipe (46) includes a separation mechanism (94) that separates the heat storage body and the heat exchange medium, the supply pipe including a first supply

pipe having discharge holes that discharge the supplied heat exchange medium into the heat storage body (Fig. 7), and a second supply pipe that crosses the boundary surface between the heat exchange medium and the heat storage body (Fig. 7), which are housed in the storage container, and has an outlet that discharges the supplied heat exchange medium into the heat exchange medium (Fig. 7), a switching valve (78, 80, 82, 84) for switching supply and cutoff of the heat exchange medium depending on the state of the heat storage body is provided severally for the first and second supply pipes (Fig. 7).

4. Claims 1-4, 11, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lindner et al (4,086,958).

Lindner et al disclose a heat storage unit (Fig. 2) including a storage container (21) that houses a heat storage body (22), which stores heat by a state change from solid to liquid (Fig. 3), a heat exchange medium (28) which exchanges heat by directly contacting the heat storage body (22), has a smaller specific gravity than that of the heat storage body and is separated from the heat storage body (Fig. 3), a supply pipe (31, 33) that passes through at least the heat storage body housed in the storage container and supplied the heat exchange medium into the storage container (Fig. 2), a discharge pipe (29) that discharges the heat exchange medium, the supply pipe (33) crosses a boundary surface between the heat exchange medium and the heat storage body (Fig. 2), has a plurality of discharge holes positioned inside the heat exchange medium

(Fig. 3), the supply pipe crossing vertically with respect to the boundary surface (Fig. 3), the supply pipe being disposed coaxially around the circumference of an area having the discharge holes (Fig. 3) and has a circulation pipe to allow the heat exchange medium discharged from the discharge holes to go up in the vertical direction (Fig. 3), at least a part of the supply pipe extending in the horizontal direction (Fig. 6), discharge holes being provided for an area extending in the horizontal direction such that the holes are open in the vertically downward direction (26 in Fig. 3), and a second supply pipe (33) that crosses the boundary surface between the heat exchange medium and the heat storage body (Fig. 2), which are housed in the storage container, and has an outlet that discharges the supplied heat exchange medium into the heat exchange medium (Fig. 2).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlow (4,219,072) in view of Kakiuchi et al (5,785,885).

Barlow discloses a heat storage unit having the structure claimed, with the exception of the material of the heat storage body being erythritol. Kakiuchi et al teaches using erythritol as a heat storage material. It would have been obvious

in view of Kakiuchi et al to use erythritol as the heat storage material in the heat storage unit of Barlow, since Kakiuchi et al teach that erythritol has improved heat storage characteristics.

7. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlow (4,219,072).

Barlow discloses a heat storage unit having the structure claimed, with the exception of the connection port of the supply pipe being positioned above a connection port of the discharge pipe. However, it would have been obvious to one of ordinary skill in the art to position the inlet and outlet connections in the heat storage unit of Barlow in any desired manner depending on the positions of the pipes they are to be connected to.

8. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barlow (4,219,072) in view of Noji et al (4,953,330).

Barlow discloses a heat storage unit having the structure claimed, with the exception of vertical wave absorbing plates. Noji et al teaches providing vertical wave absorbing plates in a liquid tank. It would have been obvious in view of Noji et al to provide wave absorbing plates in the heat storage unit of Barlow, the motivation being to prevent splashing of the liquids.

9. Claims 9, 12, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 21-29 are allowed.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reusch et al, Helshoj, Lindner et al, and Yanadori et al are cited to show heat storage devices.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 8:00 - 4:30.

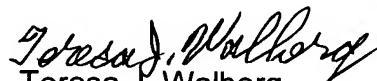
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Teresa J. Walberg  
Primary Examiner  
Art Unit 3744

/tw/